

CLAIMS

1. A bonding pad electrically coupled to a via that extends from one side of a substrate to an opposing side of a substrate, the bonding pad comprising:
 - a photo mask area;
 - a clearance area located within the photo mask area;
 - a land area, located within the clearance area, for receiving at least one insulated bond wire, and wherein at least one of the photo mask area, the clearance area and the land area has at least one sharp edge that assists a pattern recognition system of a wire bonder in locating the at least one bond wire on the land area, and wherein the photo mask area, the clearance area and the land area surround the via; and
 - a plug located within the via, wherein the at least one insulated bond wire is electrically coupled to the via.
2. The bonding pad of claim 1, wherein the clearance area comprises BT.
3. The bonding pad of claim 1, wherein the land area comprises a conductive metal.
4. The bonding pad of claim 3, wherein the conductive metal comprises at least one of copper, gold, silver and aluminum.
5. The bonding pad of claim 1, wherein the photo mask area and the clearance area are generally rectangular.

6. The bonding pad of claim 5, wherein the land area is generally rectangular.
7. The bonding pad of claim 6, wherein the land area has a plurality of sharp edges that assist the pattern recognition system of the wire bonder in locating the land area and attaching the at least one bond wire thereto.
8. The bonding pad of claim 7, wherein the land area has one or more cut outs on each side that are perpendicular to the side and extend toward the via.
9. The bonding pad of claim 1, further comprising a solder mask area located within the land area and surrounding the via plug.
10. A bonding pad electrically coupled to a via that extends from one side of a substrate to an opposing side of a substrate, the bonding pad comprising:
 - a photo mask area surrounding the via;
 - a clearance area located within the photo mask area and surrounding the via;
 - a land area, located within the clearance area and surrounding the via, for receiving at least one bond wire, wherein at least one of the photo mask area, the clearance area and the land area has at least one sharp edge that assists a pattern recognition system of a wire bonder in locating the at least one bond wire on the land area.

11. The bonding pad of claim 10, wherein the clearance area comprises BT.
12. The bonding pad of claim 10, wherein the land area comprises a conductive metal.
13. The bonding pad of claim 12, wherein the conductive metal comprises at least one of copper, gold, silver and aluminum.
14. The bonding pad of claim 10, wherein the photo mask area and the clearance area are generally rectangular.
15. The bonding pad of claim 14, wherein the land area is generally rectangular.
16. The bonding pad of claim 15, wherein the land area has a plurality of sharp edges.
17. The bonding pad of claim 16, wherein the land area has one or more cut outs on each side thereof that are perpendicular to the side and extend toward the via.
18. The bonding pad of claim 15, further comprising a solder mask area located within the land area and surrounding the via.
19. A package substrate for an integrated circuit, comprising:
 - a top traceless surface;
 - a bottom traceless surface;

a plurality of vias in the package substrate extending between the top and bottom traceless surfaces, wherein each of the plurality of vias includes one of a plurality of via capture pads arranged on the top traceless surface; and wherein each via capture pad includes at least one sharp edge that assists a pattern recognition system of a wire bonder in locating at least one bond wire on the via capture pad.

20. The package substrate of claim 19, wherein the integrated circuit is electrically coupled to the plurality of vias using a plurality of traceless conductors.
21. The package substrate of claim 20, wherein the plurality of traceless conductors comprises a plurality of insulated wires.
22. The package substrate of claim 19, wherein the package substrate is a ball grid array (BGA) substrate.
23. The package substrate of claim 19, further comprising a plurality of clearance areas on the top surface of the substrate, each clearance area surrounding one of the via capture pads.
24. The package substrate of claim 23 wherein each clearance area comprises BT.
25. The package substrate of claim 23, further comprising a plurality of photo mask areas on the top surface of the

substrate, each photo mask area surrounding one of the clear areas.

26. The package substrate of claim 19, further comprising a plurality of plugs located in respective ones of the plurality of vias.

27. The package substrate of claim 19, wherein all of the via capture pads are rectangular shaped and have varying numbers of cut-outs therein.